3GPP TSG RAN WG2 #121bis-e R2-23xxxxx

Electronic meeting, 17th – 26th April 2023

**Title:** Draft LS on RRC configuration of Tx state in Rel-18 UL Tx switching

**Response to:**

**Release:** Release 18

**Work Item:** NR\_MC\_enh-Core

**Source:** NTT DOCOMO, Inc.[to beRAN WG2]

**To:** RAN WG1

**Cc:** RAN WG4

**Contact person:** Riki Okawa

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**Attachments:** none

# 1 Overall description

RAN2 has discussed how to introduce RRC configuration of an associated band based on the following RAN1 agreement.

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| Agreement:Following working assumption is confirmed with updates.Working Assumption~~At least~~ for dual UL, reuse existing RRC parameter {oneT, twoT} via uplinkTxSwitching-DualUL-TxState to solve the issue on ambiguous switching state at least for following cases* Case#1 of the issue: two Tx chains are currently associated with band A, and next transmission is 1 port transmission on band B, but there are multiple possible switching cases where 1P on band B is supported
	+ if twoT is indicated, both of two Tx chains are switched to band B
	+ if oneT is indicated, one Tx chain is switched to band B while another Tx chain remains on band A
* Case#2 of the issue: two Tx chains are currently associated with band A and B, and next transmission is 1 port transmission on band C, but there are multiple possible switching cases where 1P on band C is supported
	+ if twoT is indicated, both of two Tx chains are switched to band C
	+ if oneT is indicated, one Tx chain is switched to band C while how to determine the associated band for another Tx chain is ~~FFS~~
		- ~~Alt.1:~~ based on ~~gNB’s configuration/indication e.g.,~~ new RRC parameter
		- ~~Alt.2: based on predefined rule~~
		- ~~Other alternative is not precluded~~

~~FFS for other potential cases~~ |

RAN2 achieved the following agreements.

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| RAN2#121* For RRC configuration to clarify ambiguous Tx state, RAN2 should introduce an RRC configuration that associates a band to another band which the unused Tx chain is switched to when the switch is from concurrent transmission on two bands to 1 Tx transmission on another band.

RAN2#121bis-e* P2: RAN2 reuse *uplinkTxSwitching-DualUL-TxState-r17* to indicate the state of Tx chains for dualUL mode.
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Furthermore, RAN2 discussed expected behaviours when a UE is indicated to switch from two bands to one different band (e.g. A+B => C) and agreed the following understanding as a baseline in RAN2#121bis-e.

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| * P3-2: Baseline R2 “understanding” (can be modified and clarified in offline)

When the UE is indicated to switch from two bands to one different band (e.g. A+B => C), follow below logic when determine the switched Tx:- If network indicates 1port transmission on band C,and *uplinkTxSwitching-DualUL-TxState* is set to *oneT*, and the associated band is configured to band C:---- Switch 1Tx chain to band C and switch another Tx chain to associated band;- Otherwise (If network indicates 1port transmission on band C, but *uplinkTxSwitching-DualUL-TxState* is not configured or is set to *twoT*, or associated band is not configured for band C, or if network indicates 2port transmission on band C):---- Switching 2Tx chains to band C. |

RAN2 would like to ask RAN1 to take the above understanding into account and inform RAN2 if any issue.

# 2 Actions

**To RAN WG1**

**ACTION:** RAN2 respectfully asks RAN1 to take the above understanding into account and inform RAN2 if any issue.

# 3 Dates of next TSG RAN WG2 meetings

TSG RAN WG2 Meeting #122 22nd - 26th May 2023 Incheon, KR

TSG RAN WG2 Meeting #123 21st – 25th August 2023 Toulouse, FR